

Mantis Study Group Newsletter 17

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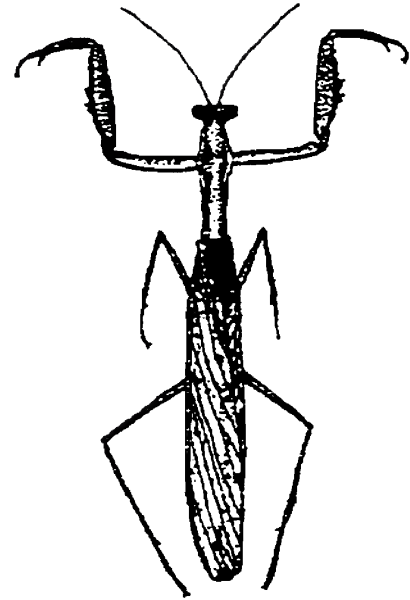
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Editorial

Apologies for the late arrival of the last newsletter; it was not my fault, the editing was done on time but there were delays at the printing end. Hopefully this one will be out on time. Another thin issue, again no one seems to have anything to write about!

Exhibitions

We hope to be exhibiting at all of the following events.

7th October 2000.

Amateur Entomologists' Society Exhibition, Kempton Park Racecourse, Staines Road, Sunbury, Middlesex. The largest UK entomology exhibition and trade fair. Attended by all the major UK dealers and quite a few from continental Europe. Doors open at 1100.

4th November 2000.

Derbyshire and Nottinghamshire Entomology Society's Annual Exhibition. At Broomfield College, near Breadsall, Derbys. Contact Phil Bragg for details nearer the time.

19th November 2000.

Creepy Crawly Show, Newton Abbot Racecourse, Devon. Open 1000-1700. Paul Taylor will be running a stand, contact him for details.

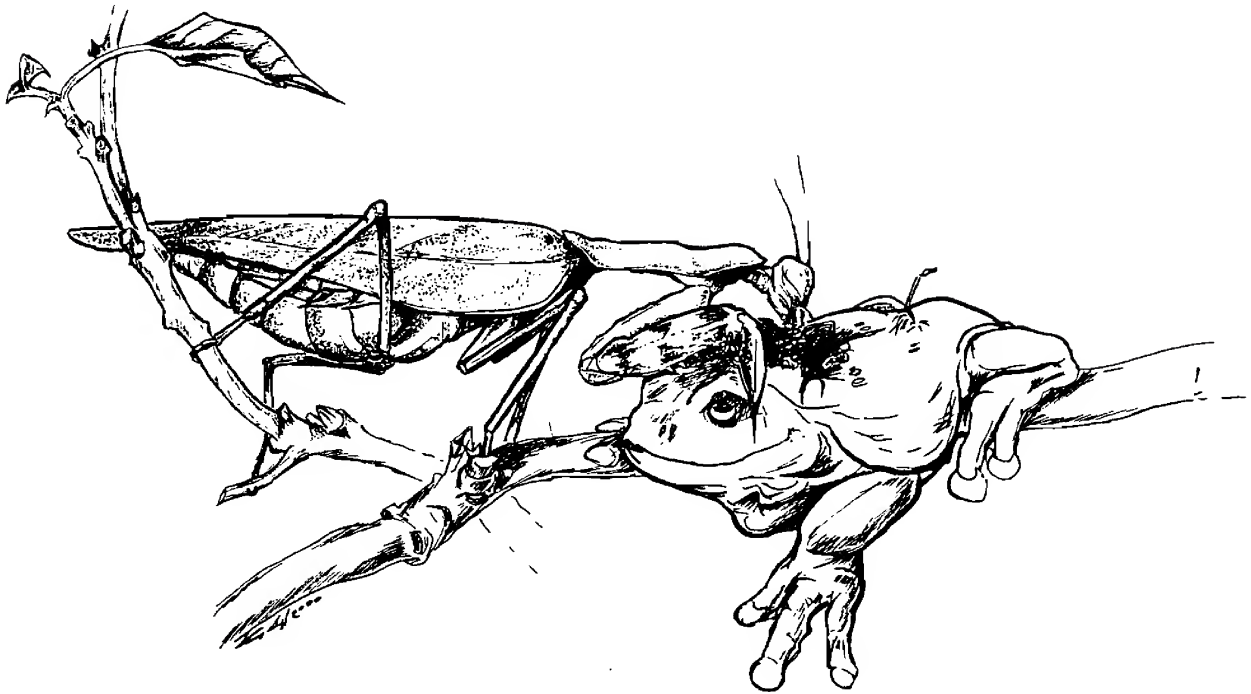
Predation of vertebrates by praying mantids

by Francesco Tomasinelli, with drawing by Andrea Mangoni.

Contrary to many beliefs praying mantids do not always feed on small unarmed insects; sometimes bigger insect species are attacked, especially if they are soft bodied specimens. Nevertheless if opportunity arises bigger species, almost always adult females, are known to attack vertebrates.

There are few cases studied but many testimonies of this behaviour. One more typical is the foraging on frogs and birds(!) by the big Australian *Hierodula wernerii*. According to the observation of Ridpath (1977) during the night in Queensland's tropical rainforest *Litoraea cerulea*, green tree frogs, are often captured and partially devoured. Numerous records are cited and on one particular occasion the frog weighed more than three times the hunter (7g v.

25g). When under attack *Litorea* performs a particular distress call which Ridpath used as clue to discover the animal.



In the same location *Hierodula* sometimes try to capture some small bird species, notably the honeyeater, *Lichimera indistincta*. This kind of hunt is performed on plants where the mantis hangs upside down waiting for victims that come to visit the flowers. Most of the catches were pollinating insects but on two occasion these birds were attacked. Sometimes the lucky animal manages to escape by fluttering vigorously. I remember seeing a picture showing a big female green mantis eating a bird but I was not able to find it any more.

There is also an incredible record of an American *Tenodera aridifolia sinensis* female attacking a white-footed deer-mouse *Peromyscus leucopus*. Anyway the mouse was quite small and the mantis did not have too much trouble neutralizing it.

Finally, another incredible report is the attack on a snake by a big *Mantis religiosa*. A young De Kay's snake, *Storeria dekay*, Colubridae, has been attacked and completely devoured by an adult female in a terrarium. The snake was around 15cm in length and in good health before the mantis' attack. As far I have seen, this one is the only report of a mantis attacking a snake but such events should not be too rare in some tropical forests. Juveniles of small arboreal hunters are probably very vulnerable to big mantids' attacks. Similar episodes, mostly involving reptiles, are described in South America; leading catchers are the big *Stagmatoptera*, *Coptopteryx*, *Sphodromantis*, *Tenodera* and sometimes, but less frequently, other species from all the continents, including *Mantis religiosa*. The mantis does not always consume all of his prey, this would be almost impossible, often skeleton is rejected even if marks of the mantis' jaws are very evident!

I carried out some experiments with big adult *Hierodula patellifera* females but I have

seen they do not normally strike at the mouse except in self defence. I employed small size brown *Mus musculus*. The mantis followed the rodent's moves and if it came too close the mantis started a "frantic display" sufficient to turn the mouse away. I think on most occasions the mouse's sudden and fast moves actually inhibited the mantis' aggressiveness.

I obtained very different results with lizards, mostly *Podarcis muralis*, very common here in Italy. On these occasions the prey was easily seized and killed. Surprisingly the mantids seemed quite selective on the consumption of the prey and only part, even of small prey, were consumed.

My friend Andrea Mangoni obtained the same results with big specimens of *Mantis religiosa* preying on *Podarcis* lizards and common geckoes, *Tarentula mauritanica*. According to most observations these events are quite rare in temperate countries, the same cannot be said for tropical rainforests. Maybe the lizard's movements prove really irresistible for a hungry mantis but they do not taste so good after all.

Feeding in captivity

Most of you are probably wondering if it is correct to feed vertebrates to these animals in captivity. Well, all of the mantis genera depicted in this article can reach adult age feeding happily on normal food (crickets, locusts, roaches, mealworms etc.), so there usually is no need to offer something exotic. Moreover, some of the available vertebrate prey are quite combative and can injure your animal. According to several observations a "real meat" meal is more nutritious than a similar weight of insects. Some of the biggest spiders are sometimes offered mice when adult; this can be a good choice during gestation and actually most species can produce bigger broods. The probability of losing the cocoon to the mother's actions can be lowered. A nourishing meal will speed up the development of an immature specimen also.

It is amazing anyway to see how each individual of the same species is different from another. According to various testimonies sometimes a specimen will readily take even rodents while others will usually reject them or just perceive them as a threat.

References

I wrote this small article selecting material from a variety of sources including personal communications, mostly with Andrea Mangoni. As mentioned, many of these behaviours were personally observed.

The following works are particularly interesting if you want to know more:

Ridpath, M.G. (1977) Predation of frogs and small birds by *Hierodula wernerii* (Mantidae) in tropical Australia. *Journal of the Australian Entomology Society*, **16**: 153-154.

McE. Kevan, K. (1985) The mantis and the serpent. *Entomologists' Monthly Magazine*, **121**: 1-8.

Besides these journals every good book on insects and their kin should contain part of this information. Particularly valuable are "Grasshopper and mantids of the world" by Preston-Mafham, and the new "The praying mantids" by Prete, Wells, Hurd, Yager and others.

Mantis abstracts

The following are abstracts from papers published recently, or in some cases details of the paper but without an abstract. The papers are in English unless otherwise indicated. The editor would be grateful for copies of any recently published papers so that abstracts may be included in this section of the newsletters.

Kral, K. & Devetak, D. (1999) The visual orientation strategies of *Mantis religiosa* and *Empusa fasciata* reflect differences in the structure of their visual surroundings. *Journal of Insect Behavior*, **12**(6): 737-752.

In the present study, peering behaviour, which is used to measure distance by the image motion caused by head movement, is examined in two types of mantis. *Mantis religiosa* inhabits a region of dense grass consisting of uniform, generally uniformly aligned, and closely spaced elements and executes slow, simple peering movements. In contrast, *Empusa fasciata* climbs about in open regions of shrubs and bushes which consist of irregular, variably aligned and variably spaced elements and it executes comparatively quick, complex peering movements. Hence, it seems that in these two species of mantis, the same orientation mechanism has been adapted to the unique structures of their visual surroundings. Apparently *M. religiosa* uses motion parallax and *E. fasciata* uses a combination of motion parallax and forward and backward movements (image expansion/contraction over time) to detect object distances.

Lombardo, F. (2000) A review of the genus *Decimiana* Uvarov, 1940 (Insecta: Mantodea), with description of a new species. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **150** 159-171.

The systematic position of the genus *Decimiana* Uvarov and its species are re-examined. Based on the anatomical structure of the copulatory apparatus, four species are now recognized in this genus, where before two species were included in it. These species are *D. tessellata* (Charpentier, 1841); *D. rehni* (Chopard, 1913), n. comb.; *D. bolivari* (Chopard, 1916), n. comb.; and *D. hebardi*, n. sp. The males of *D. rehni* and *D. bolivari* are described for the first time. A neotype is selected for *D. tessellata*.

Roy, R. (1999) A new afrotropical species of the genus *Mantis* Linné (Dictyoptera, Mantodea, Mantidae). *Revue Francaise d'Entomologie*, (N.S.) **21**(4) 163-166. [In French]
Mantis beieri n.sp. is described from the guinean savannas of Africa.

Vrsansky, P. (1999) Two new species of Blattaria (Insecta) from the Lower Cretaceous of Asia, with comments on the origin and phylogenetic position of the families Polyphagidae and Blattulidae. *Entomological Problems*, **30**(2): 85-91.

The family Blattulidae is found to be ancestral to the family Polyphagidae. Evidence is given that a Blattulidae-Polyphagidae lineage originated in at least the Lower Jurassic, possibly making the order Blattaria (and also living representatives of the order) paraphyletic in respect to Mantodea and Isoptera. The Blattulidae-Polyphagidae lineage, which independently lost its ovipositor, is a sister group to all the known living roach lineages. *Vitisma rasnitsyni* n.gen. & n.sp. from the Lower Cretaceous of Siberia is described as the most primitive representative of the family Polyphagidae, with microstructures, sensilla and venation variability. *Ctenoblattina tsaganica* n.sp. (Blattulidae) is described from the Lower Cretaceous of Asia. The systematic position of *Cretoholocompsa montsecana* Martinez-Delclos is discussed. Mantodea are also mentioned.

Zhang W.N. & Wang B.X. (1999) A new record genus and species of mantidae (Mantodea) from China. *Entomotaxonomia*, **21**(4): 307-308. [In Chinese]
Parablepharis n.gen. & *Parablepharis kuhlii* n.sp. are described. [Abstract not yet available].